LUMINARY Memo #111

To:        Distribution
From:    B. McCoy
Date:     19 September 1969
Subject:  Level 6

The Level 6 testing is now underway.  It is designed to test the new features of Luminary 1B and the particulars offered by Apollo 12.  The test runs are divided into 4 groups and described as follows:

1.  Rendezvous
    LM Active-Nominal
        P00, P52, P20, P32, P41, P30, P41, P33, P41, P34, P41,
        P35, P41, P35, P41, P47
    Abort Insertion Profile to Rendezvous
        P00, P52, P20, P32, P41, P32, P41, P33, P41, P34, P41,
        P35, P41, P35, P41

2.  Lunar Surface and Ascent
        P68, P00, P12, P57 (2 stars), P06, P57 (gravity/star),
        P57 (gravity/refsmmat), P22, P12, P20, P32 (initialized
        with $5^{o}$ pitch, $15^{o}$ yaw)

3.  Aborts from Descent
        Early - P00, P63, P70 (at 30 kft), P20 (11 mks), P32 (one soln)
        Mid - P00, P63, P70 (at 10 kft), P71 (at FV97), P20 (11 mks),
              P32 (one soln)
        Late - P00, P63/P64, P71 (at 500 ft), P20 (11 mks), P32 (one soln)

4.  Landing
    a)  Enter P66 at 700 ft altitude; null   all velocity components

b) Redesignations and NOUN 69 Delta's

| | | NOUN 69 Range | | Redesignations Range | |
|---|---|---|---|---|---|
| case | load at | Down | Cross | Down | Cross |
| 1 | PDI + 3m | +5K | +5K | NONE | NONE |
| 2 | " | +35K | +10K | -3K | -5.2K |
| 3 | PDI - 3m | +25K | +5K | +8K | +10K |
| | PDI + 3m | +10K | +5K | | |
| 4 | | NONE | | +5K | -5K |
| 5 | + 3m | -35K | -10K | -3K | -10K |

- check fuel consumption, visibility, and throttle behavior
- use state vectors for hi/lo trajectories
- enter P66 at 500 ft and null velocities

c) Nominal Error-Free (Automatic)
- check weighting functions for vel/alt

d) LR Position Check
- LR placed in Position 1 but channel bits don't indicate either position
- P64 gives 523 alarm; PRO to assume Position 2
- enter P66 at 500 ft and null velocities

Forthcoming is an anomaly that results in the X-pointers being disabled during descent. If the RR mode switch is placed in and out of LGC position during descent the RR Error Counter Enable (C1262) is reset; R10 does not subsequently set the bit back to allow velocity information to reach the CDU error counters to display on the X-pointers. The recovery is to cycle the MODE SELECT switch out of and back into PGNS.

Evidence was reported from the LMS (KSC) of an early shutdown of the engines during a very early abort (PDI + 28 sec). We have found on our simulators that it is possible to have such a case with an improper erasable pad load. However, using the proper load there is no evidence of early shutdown aborting at any point in the descent.